

### **REMARKS/ARGUMENTS**

Claims 7 – 9, 11, 12, and 16 - 19 are pending in this application.

Claims 7, 9, 11, and 12 have been amended. Claims 14 and 15 have been cancelled. New dependent claims 16 – 19 have been added.

In the Office Action, claims 9 and 12 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite. Also, in the Office Action, claims 7, 11, 12, and 15 are rejected under 35 U.S.C. 102(b) as being anticipated by U.S. Patent No. 4,790,743 to Leikert et al. Furthermore, in the Office Action, claims 8 and 9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Leikert et al '743 as applied to claim 7 and further in view of U.S. Patent No. 5,411,394 to Beer et al. Additionally, in the Office Action, claims 7 and 14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Leikert et al '743 in view of U.S. Patent No. 4,739,713 to Vier et al.

With respect to the rejection of claims 9 and 12 under 35 U.S.C. 112, second paragraph, the Applicants have amended claims 9 and 12 to delete the indefinite language therein and submit that these claims are now definite.

With respect to the rejection of claims 7, 11, 12, and 15 under 35 U.S.C. 102(b) and claims 7, 8, 9 and 14 under 35 U.S.C. 103(a), the Applicants request favorable reconsideration in view of the amendments of claims 7, 9, 11, and 12, the cancellation of claim 15, and the following comments.

The present invention, as recited in claim 7 as currently amended, relates to a method of burning a nitrogen-containing fuel while reducing the emission of nitrogen oxides. The inventive method includes the steps of producing a sub-stoichiometric primary zone in the form of a flame core from fuel and primary air, and

supplying the flame core with a nitrogen oxide reducing agent so that the reducing agent is distributed within the flame core, wherein the reducing agent is a nitrogen compound or a hydrocarbon.

Leikert et al '743 discloses a method for burning a nitrogen-containing fuel, while reducing the emission of nitrogen oxides. Leikert et al '743's method includes the steps of producing a sub-stoichiometric primary zone 7 in the form of a flame core and also injecting, at a secondary fuel zone 8 outside of the primary flame zone 7, a reduction fuel, the reduction fuel being injected via reduction fuel nozzles 4. Thus, Leikert et al '743 teaches away from the inventive method of supplying the sub-stoichiometric primary zone with a nitrogen oxide reducing agent for the reason that Leikert et al '743 teaches its primary flame zone 7 to which a primary fuel (coal dust) and combustion air are fed, and teaches that a reducing agent is introduced into its secondary flame zone 8, not its primary flame zone 7.

While Leikert et al '743 discloses that this reduction fuel injected into its primary flame zone 7 can be coal dust, Leikert et al '743 does not teach or disclose that coal dust introduced into its primary flame zone 7 is a reducing agent. Instead, any coal dust introduced into the primary flame zone 7 of Leikert et al '743 merely serves as a primary combustion fuel. Leikert et al '743 itself distinguishes between coal dust that is fed into the primary flame zone 7 as a primary fuel and coal dust that is injected into the secondary flame (reduction) zone 8. For example, Column 2, lines 44 – 53, of Leikert et al '743 discloses that the coal dust for reduction purposes may be differently prepared than the coal dust intended for primary fuel purposes. This acknowledgement by Leikert et al '743 that coal dust introduced into its primary fuel zone 7 is for primary fuel purposes (not reduction purposes) and that coal dust

injected into its secondary flame zone 8 is for reduction purposes is highlighted, for example, in Column 2, lines 57 – 59: “The carrier gas for the primary coal dust and/or the reduction coal dust is selected from the group: air, flue gas of the combustion or mixtures thereof.” In fact, increasing the amount of coal dust introduced into the primary flame zone 7 of Leikert et al ‘743 would merely change the air to fuel ratio (stated, in Column 3, line 61 of Leikert et al ‘743 as  $n = 0.9$ ); in accordance with Leikert et al ‘743’s arrangement, reduction would still be effected in the secondary flame zone 8.

In contrast, in the present invention as recited in claim 7 as currently amended, the  $\text{NO}_x$  reducing agent is introduced directly into the primary zone - that is, the flame core at which the combustion fuel and the primary air are fed – so that the  $\text{NO}_x$  reducing agent is distributed in the flame core. The inventive  $\text{NO}_x$  reducing method does not call for the  $\text{NO}_x$  reduction to be accomplished in a secondary zone and is thus neither anticipated by, nor obvious in view of, the conventional arrangements such as disclosed in Leikert et al ‘743 wherein the  $\text{NO}_x$  is produced in the primary flame zone before the thus-produced  $\text{NO}_x$  is then reduced in the secondary flame zone.

The secondary reference to Beer, cited in combination with Leikert et al ‘743 in support of the rejection of claims 8 and 9 under 35 U.S.C. 103(a), does not disclose supplying a reducing agent to the flame core. Again, then, because claims 8 and 9 depend from claim 7, the combination of Leikert et al ‘743 and Beer cannot render obvious the subject matter of claims 8 and 9.

Likewise, U.S. Patent No. 4,739,713 to Vier et al, which is combined with Leikert et al ‘743 to reject claim 7 of the present application under 35 U.S.C. 103(a),

does not disclose supplying a reducing agent to the flame core. The mere fact that Vier et al '713 teaches that coal dust is known to include nitrogen would not lead one of skill in the art to, in effect, turn the Leikert et al '743 arrangement on its head and introduce a reducing agent into Leikert et al '743's primary flame 7 instead of its secondary flame zone 8.

For the reasons set forth above, the Applicants respectfully submit that claims 7- 9, 11, and 12 are patentable over the cited references and request withdrawal of the respective rejections of these claims under 35 U.S.C. 102 and 103. Additionally, the Applicants submit that claims 16 – 19 depending from claim 7 as currently amended are allowable for at least the reasons, as set forth above, that claim 7 as currently amended is allowable.

In light of the foregoing amendment and argument in support of patentability, the Applicants respectfully submit that this application now stands in condition for allowance. Action to this end is courteously solicited. However, should the Examiner have any further comments or suggestions, the undersigned would very much welcome a telephone call in order to discuss appropriate claim language that will place the application into condition for allowance.

Respectfully submitted,



Robert W. Becker, Reg. 26,255  
Attorney for Applicant(s)

ROBERT W. BECKER & ASSOCIATES  
707 Highway 66 East, Suite B  
Tijeras, New Mexico 87059

Telephone: 505 286 3511  
Telefax: 505 286 3524

RWB:mac